

LISTING OF CLAIMS

1. (Currently Amended) A gas seal structure for use with a gas having a high permeability with respect to a rubber material, the gas seal structure comprising:

a main seal means that is made of the rubber material and is disposed between two seal surfaces;

a sub-seal means that is made of resin and is disposed between the two seal surfaces, the sub-seal means being located closer to a higher-pressure region than the main seal means and being provided with a concave groove, the higher-pressure region arranged to receive the gas having a high permeability with respect to a rubber member, such that the sub-seal means is positioned to be exposed to the gas; and

a pressure variation reducing means that is disposed between the main seal means and the sub-seal means and has a variation reducing space connected only to a gap formed between the two seal surfaces, the variation reducing space being closed by the main seal means and the sub-seal means such that the variation reducing space is disconnected from atmosphere; and

wherein the variation reducing space is formed by a concave portion formed in one of the two seal surfaces.

2. (Original) The gas seal structure according to claim 1, wherein the sub-seal means is disposed such that the concave groove opens toward the higher-pressure side region.

3. (Original) The gas seal structure according to claim 1, wherein the sub-seal means is disposed such that the concave groove opens toward a lower-pressure side region.

4. (Currently amended) A gas seal structure comprising:
a main seal comprising a rubber material, the main seal disposed between two seal surfaces, the rubber material having a high permeability when exposed to a gas having a low molecular weight;

a sub-seal comprising a resin material, the sub-seal disposed between the two seal surfaces, the sub-seal disposed closer to a higher-pressure region than the main seal;

a concave groove formed in the sub-seal;

a gap formed between the two seal surfaces adjacent the sub-seal;

an enclosed pressure variation reducing space disposed between the main seal and the sub-seal and in flow communication with the gap, the pressure reducing space closed by the main seal and the sub-seal, the pressure variation reducing space formed at least in part by a concave portion formed in either of the two seal surfaces and between the main seal and the sub-seal, the concave portion forming having a volume arranged to inhibit occurrence of a blistering phenomenon in the main seal.

5. (Previously Presented) The gas seal structure according to claim 4, wherein the sub-seal is disposed such that the concave groove opens toward the higher-pressure region.

6. (Previously Presented) The gas seal structure according to claim 4, wherein the sub-seal is disposed such that the concave groove opens toward a lower-pressure region, the main seal disposed closer to the lower pressure region than to the sub-seal.